

What is Claimed Is:

1. An image processing method for performing half tone processing on input images using an error diffusion method,  
5 comprising steps of:

generating a sine wave in which the amplitude and the frequency are modulated according to the average value of a target pixel value and the peripheral pixel values;

10 adding quantization errors, said target pixel value and said sine wave;

quantizing said addition result by a predetermined number of grayscale levels; and

calculating the quantization errors of said peripheral pixels from errors by said quantization.

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2. The image processing method according to Claim 1, wherein said step of generating a sine wave further comprises steps of

calculating the average value of said target pixel value and said peripheral pixel values;

20 calculating the difference between said target pixel value and said average value, and

modulating the amplitude of said sine wave using said average value and said difference.

25 3. The image processing method according to Claim 1, wherein said step of generating a sine wave further comprises a step of independently controlling the cycle in the horizontal

direction and the cycle in the vertical direction of said sine wave.

4. The image processing method according to Claim 1, wherein  
5 said step of generating a sine wave further comprises a step of setting different initial phases of said sine wave for the input image of each color.

10 5. The image processing method according to Claim 1, further comprising a step of scanning said input image in two directions and reading said target pixel value and said peripheral pixel values,

15 wherein said step of calculating the quantization errors of the peripheral pixels further comprises a step of calculating said quantization errors using an error filter which is selected from a plurality of error filters according to said target image value.

20 6. An image processor which performs half tone processing on an input image using an error diffusion method, comprising

a memory for storing said input image and

a processing part for performing said half tone processing on said input image,

25 wherein said processing part adds a sine wave in which the amplitude and the frequency are modulated according to the average value of the target pixel value and the peripheral pixel values, said diffused quantization errors and said target pixel value, then

quantizes the addition result by a predetermined number of grayscale levels, and calculates the quantization errors of said peripheral pixels from errors by said quantization.

5     7. The image processor according to Claim 6, wherein said processing part calculates the average value of said target pixel value and said peripheral pixel values, calculates the difference between said target pixel value and said average value, and modulates the amplitude of said sine wave using said average value and said difference.

10     8. The image processor according to Claim 6, wherein said processing part independently controls the cycle in the horizontal direction and the cycle in the vertical direction of said sine wave.

15     9. The image processor according to Claim 6, wherein said processing part sets different initial phases of said sine wave for the input image of each color.

20     10. The image processor according to Claim 6, said processing part scans said input image in two directions and reads said target pixel value and said peripheral pixel values, and calculates said quantization errors using an error filter which is selected from a plurality of error filters according to said target image value.

11. A storage medium for storing a program to perform half tone processing on an input image using an error diffusion method, wherein said program comprises:

5 a program for generating a sine wave in which the amplitude and the frequency are modulated according to the average value of the target pixel value and the peripheral pixel values;

a program for adding said diffused quantization errors, said target pixel value and said sine wave; a program for quantizing said addition result by a predetermined number of grayscale levels; and

10 a program for calculating the quantization errors of said peripheral pixels from errors by said quantization.